

mentoring ("e-mentoring") program. An example is MentorNet (College of Engineering, San Jose State University, One Washington Sq, San Jose, CA 95192-0080), an electronic industrial mentoring program for female undergraduate and graduate students in engineering and related sciences established in 1996.

Women in Engineering Programs and Advocates Network, the nonprofit organization that administers and governs MentorNet, found 4 primary advantages of a national e-mentoring program over locally based programs. First, the larger the pool of participants, the more diversity and suitable matches. Second, students are not limited to organizations located in their school's geographical area. Third, economies of scale offer schools relief from the costs of administering their own programs. Fourth, a national program can be evaluated for the development of best practices.

The first National Public Health Student-Mentor Program pilot study (see Mahayonsand and Stigler²) showed that 52% of communications were conducted through e-mail. Therefore, e-mentoring can enhance this program in the following ways: (1) Participants can complete a Web-based application on which they state their matching criteria; (2) matches can be made in a central, national database; (3) important mentoring literature can be posted on a single Web site; (4) interventions can be posted on the Web to allow more time for individual consultation; (5) more time is available to design local and national participant social events; and (6) the program can ultimately match pairs year-round.

The National Public Health Student-Mentor Program has 2 major shortcomings: lack of on-site operational support and lack of funding. Student volunteers from more than a dozen schools throughout the nation conducted the pilot study with a budget of approximately \$400 in donations. Successful programs such as MentorNet and Electronic Emissary (College of Education, University of Texas, Austin, TX 78712) can be easily replicated. The latter, established in 1993, is believed to be the longest-running Internet-based telementoring and research effort serving kindergarten through 12th-grade students and teachers.

In addition, funds can be secured through grants or endorsing partners (e.g., MentorNet draws from partners who commit \$10 000 to \$50 000 per year for 3 years). Initial grant funds would enable the National Public Health Student-Mentor Program to design a Web site and program infrastructure, establish evaluation methods, and obtain staff and an advisory board, publications, equipment, and licenses. Once the foundation is set, the program can seek industrial partners and ultimately be self-sufficient.

If incremental success is to be experienced, support is necessary. While volunteer-

ing as a mentor is important, organizing or funding a viable e-mentoring program is crucial. Technology allows us to e-mentor, so what are we waiting for—the next millennium? □

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Measuring Smokers' Perceptions of the Health Risks From Smoking Light Cigarettes

Light cigarettes, the nation's bestsellers, help keep health-concerned smokers smoking.¹⁻³ Studies of smokers' perceptions of light cigarettes⁴⁻⁷ found that 20% to 40% of smokers of light cigarettes believe these cigarettes reduce the risk of health problems.

To measure smokers' perceptions of the health risks from smoking light cigarettes, we used 2 types of questions that went beyond asking respondents why they smoked light cigarettes.⁸ The first used common language to yield a 5-point ordered categorical measure (ORD-CAT): "Compared with smoking REGULAR cigarettes, would smoking LIGHT cigarettes increase, decrease, or have no effect on your risk of having health problems?" A follow-up question was asked, when appropriate: "Is that GREATLY increase [decrease] or SOMEWHAT increase [decrease]?" This format shows similar results for perceived risks of cancer and heart disease. The other format was viewed as more numerically sophisticated: "If the number 100 stood for the risk to health from a REGULAR cigarette, and 1 stood for the risk to health for a nonsmoker, what number stands for the risk to the health of a smoker of LIGHT cigarettes?" We hoped this question would yield meaningful numbers representing the magnitude of smokers' beliefs.

Variants of 1-100 or 1%-100% scales are used in policy-related studies to quantify risk perception and compare perception with mea-

sured risks.^{8,9} Experts in risk perception⁸ have expressed concern over the popularity of this simplistic, numerically naive approach to risk perception—and to public health policy.

We failed to find the predicted effects with the format that used the 1-100 scale, but we found them with the ORD-CAT format. To explore this discrepancy, we cross-tabulated these 2 questions in several of our data sets. An example is presented below. For the methodology used with this national sample of daily smokers (18 years and older) of light cigarettes, see references 4 and 6.

We assumed that the ORD-CAT question has greater face validity, but less promise of quantitative information, than does the 1-100 question. On the basis of responses to the ORD-CAT question, we estimated the proportion of respondents who gave inconsistent responses to the 1-100 question. Of the 266 respondents (74%) who chose a number less than 100—presumably indicating that light cigarettes are considered less risky than regular cigarettes—75% gave logically inconsistent answers to the ORD-CAT question (15.8% answered "increase," 56% answered "no effect," and 3% answered "don't know"). This inconsistency, as seen in Table 1, raises doubts that the 1-100 question yielded valid answers.

We previously believed that the 1-100 question was more sensitive than an ORD-CAT question in detecting beliefs about light cigarettes.¹⁰ We now think the 1-100 item is misleading. The most commonly reported number was 50. However, one would be ill-advised to assume that a reply of "50" necessarily means that the respondent believed that light cigarettes are less risky than regular cigarettes, because 8 of 10 ORD-CAT responses were logically inconsistent. Innumeracy is a likely factor.⁹ Perhaps confused respondents, unpracticed at manipulating numbers in their heads, were just giving noncommittal, "middle" responses. This 1-100 scale is not a true ratio scale (equal interval, true zero), and a 10-point version would probably not improve the validity significantly.¹¹ (See the article by Weinstein⁹ for a review of problems with numerical risk estimates.) Some smokers told us that light cigarettes "increase risks," because smokers tend to smoke more of them. The 1-100 question does not permit the 14% who said that light cigarettes increase risks to give a number over 100.

Like other consumers,⁸ smokers do not possess an actuarial, numerically sophisticated appreciation of the risks of what they do, and for risk reduction, the thought that a product is "less risky" may be sufficient to influence behavior. Do those taking an aspirin each day do so because they have a numerical appreciation of their reduced risks or because they think

TABLE 1—Answers (in Percentages) to Ordinal Categories for Perceived Risks of Light Cigarettes vs Regular Cigarettes as a Function of Answers to a Numerical "1–100" Question in a National Probability Sample of Daily Smokers of Light Cigarettes (n = 360)^a

Ordinal Categories (n [%])	Answers to the "1–100" Question ^b					
	<50 (n = 38 [10.1%])	50 (n = 77 [21.4%])	75 (n = 39 [11%])	51–99 (n = 151 [41.9%])	100 (n = 58 [16.1%])	Don't Know (n = 35 [9.7%])
1. Increase greatly (13 [3.5])	2.6	5.2	2.6	4.0	3.4	0.0
2. Increase somewhat (37 [10.3])	15.8	13.0	10.3	9.9	5.2	8.6
3. No effect (211 [58.6])	47.4	58.4	64.1	57.0	79.3	45.7
4. Decrease somewhat (68 [18.9])	23.7	16.9	20.5	25.2	5.2	14.3
5. Decrease greatly (6 [1.7])	2.6	3.9	0.0	1.3	0.0	0.0
6. Don't know (23 [6.4])	5.3	2.6	2.6	2.6	6.9	31.4
% Inconsistent answers ^c	71.1	79.2	79.6	73.5	20.7	68.6

^aTwo respondents refused to answer.

^b"75" appears alone and within "51–99."

^cFor column "100," inconsistent answers were rows 1, 2, 4, 5, and 6; for the "don't know" column, inconsistent answers were rows 1, 2, 3, 4, and 5; for all other columns, inconsistent answers were rows 1, 2, 3, and 6.

they will simply be better off? No one survey question creates a full rendering of smokers' beliefs, but the 1–100 question seems to paint the wrong picture. □

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Contributors

L. T. Kozlowski planned the study, analyzed the data, and wrote the first draft of the paper. M. E. Goldberg and B. A. Yost collaborated in the planning of the study

and the design of the questions; they also contributed to writing the paper.

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